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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,648	01/05/2001	Bodo Furchheim	7054-101XX	1304
62836 7590 09/13/2007 BERLINER & ASSOCIATES 555 WEST FIFTH STREET 31ST STREET LOS ANGELES, CA 90013			EXAMINER KIM, CHONG HWA	
			ART UNIT 2167	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

09/674,648

Applicant(s)

FURCHHEIM ET AL.

Examiner

Chong H. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 and 3-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recites the newly added limitation “upsetting regions by kneading, *swaging, or stretching*” (emphasis added). According to the specification, the regions, which lie at the ends of the tube outside the regions in which the cams are seated, are upset by kneading. There is no description concerning the ends of the tube being upset by swaging or stretching. Therefore, such recitation is considered a new matter.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki, U.S. Patent 4,660,269 in view of Jordan, U.S. Patent 4,382,390.

Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearer rings 3 attached thereto, the method comprising the following steps; placing bearer rings in correspondence with prospective locations of hollow cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view in the axial direction) and the necessary hardness, strength, and wear resistance, in a separate method; placing the tube and the bearer rings in a high internal pressure forming tool 20; applying axial forces to the ends of the tube while applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined regions to form the hollow cams from the material of the tube and whereby the bearer rings are attached to the hollow tube cams in a frictional and interlocking manner by expansion of the tube; upsetting regions 7 and 8 that lie at the end of the tube outside the regions in which the cams are seated so as to be increased in thickness for forming different functional elements 4 and 5; characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size; characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube; characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool; characterized in that the ends of the tube comprise bearing faces, drive and/or control elements 4 and internal and/or external screw threads; characterized in that the bearer rings consist of sintered metal (col. 3, line 24); characterized in that at least one radially extending groove (the groove inherently

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formed in a hole with a hexagonal shape in cross section; see col. 3, lines 22-31 and ref. No. 14) is produced in the bearer ring and the drive and control elements; characterized by additional drive and control elements, preferably sprocket or gear wheels, secured by the internal high pressure forming method; characterized in that the side, facing the tube of the bearer ring has chamfers on both sides on the side facing the tube; and characterized in that the bearer rings are hardened prior to application on the formed cams; but fails to show the bearer rings having equal radial thickness completely around the tube and the end regions of the tube being upset by kneading.

As to the matter of the bearer rings, Jordan teaches, in Figs. 1 and 2, a cam shaft, characterized in that the cam shaft is produced from a tube by the internal high pressure forming method comprising regions 7 of the tube defining hollow cams in form and in position in a single piece, and on the formed cams a bearer rings 2 shaped to correspond to the cam periphery and made of a hard, wear-resistant material is secured frictionally and in an interlocking manner, each of the bearer rings having an outer surface and an inner surface, the radial thickness between the outer and inner surface being equal completely around the cam.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shape of the bearer ring of Suzuki with the equal radial thickness as taught by Jordan in order to reduce weight and cost as described by Jordan, in col. 1, lines 27-30 and 53-56.

As to the matter of the end regions being upset by kneading, The Examiner takes Official Notice the fact that a kneading process in metal forming art is well known practice. To change shape or size of any metal element by kneading would have been an obvious process choice.

5. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki, U.S. Patent 4,660,269 in view of Dawson, IPN WO 88/00643.

Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearer rings 3 attached thereto, the method comprising the following steps; placing bearer rings in correspondence with prospective locations of hollow cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view in the axial direction) and the necessary hardness, strength, and wear resistance, in a separate method; placing the tube and the bearer rings in a high internal pressure forming tool 20; applying axial forces to the ends of the tube while applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined regions to form the hollow cams from the material of the tube and whereby the bearer rings are attached to the hollow tube cams in a frictional and interlocking manner by expansion of the tube; upsetting regions 7 and 8 that lie at the end of the tube outside the regions in which the cams are seated so as to be increased in thickness for forming different functional elements 4 and 5; characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size; characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube; characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool; characterized in that the ends of the tube comprise bearing faces, drive and/or control elements 4 and internal and/or external screw threads; characterized in that the bearer rings consist of sintered metal (col. 3, line 24); characterized in that at least one radially extending groove (the groove inherently

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formed in a hole with a hexagonal shape in cross section; see col. 3, lines 22-31 and ref. No. 14) is produced in the bearer ring and the drive and control elements; characterized by additional drive and control elements, preferably sprocket or gear wheels, secured by the internal high pressure forming method; characterized in that the side, facing the tube of the bearer ring has chamfers on both sides on the side facing the tube; and characterized in that the bearer rings are hardened prior to application on the formed cams; but fails to show the bearer rings having equal radial thickness completely around the tube and the end regions of the tube being upset by kneading.

As to the matter of the bearer rings, Dawson shows, in Figs. 1-8, a cam shaft, characterized in that the cam shaft is produced from a tube 10 by the internal high pressure forming method comprising regions 24 of the tube defining hollow cams in form and in position in a single piece, and on the formed cams a bearer rings 12 shaped to correspond to the cam periphery and made of a hard, wear-resistant material is secured frictionally and in an interlocking manner, each of the bearer rings having an outer surface and an inner surface, the radial thickness between the outer and inner surface being equal completely around the cam.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shape of the bearer ring of Suzuki with the equal radial thickness as taught by Dawson in order to reduce weight and cost as described by Dawson, on page 13, lines 21-26.

As to the matter of the end regions being upset by kneading, The Examiner takes Official Notice the fact that a kneading process in metal forming art is well known practice. To change shape or size of any metal element by kneading would have been an obvious process choice.

***Response to Arguments***

6. In response to the applicant's argument Suzuki fails to show the application of hydraulic pressure and the application of axial force "at the same time", it is the Examiner's view that the claim, as newly amended, recites that the steps involve "applying axial forces to the ends of the tube *while* applying a medium under a high internal pressure..." (emphasis added). Although the axial force and the fluid pressure may not "start" as the same time, Suzuki does disclose that the hydraulic pressure is applied while the axial force is applied as shown in Figs. 1 and 4. As it is evident in Figs. 1 and 4, the arrows indicate that the axial force is applied during the hydraulic pressure application so that the tube is expanded and shortened at the same time. Furthermore, Suzuki discloses, in col. 4, lines 6-12, that both ends 24 and 25 "are adapted to be pressed toward each other axially...by hydraulic piston-cylinder mechanism (not shown) to counter the liquid pressure to be introduced..." Such disclosure suggests that the axial force and the fluid pressure are applied at the same time at least one point during the forming process.

7. In response to the applicant's argument that Suzuki fails to show the ends being upset by kneading or swaging, it is the Examiner's view that the end being deformed by swaging or stretching is not described in the specification as originally filed, as discussed above in the rejection based on 356 USC 112, 1<sup>st</sup> paragraph.

8. In response to the applicant's argument that Suzuki fails to show shaping of drive and control elements at the ends of the tube, it is the Examiner's view that Suzuki shows such step as discussed above. The drive and control elements at the ends of the tube of Suzuki are identified as elements 4 and 5. Certainly, the elements 4 and 5 are shaped by some form of known process.



***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chong H. Kim whose telephone number is (571) 272-7108. The examiner can normally be reached on Monday - Friday; 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

chk  
September 6, 2007



CHONG H. KIM  
PRIMARY EXAMINER